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Report No. 11-41

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ORIGINAL ARTICLES

Authors alone are responsible for opinions expressed in the contribution and for its clearance through their federal health agency, if required.

MILITARY MEDICINE, 177, 7:766, 2012

Mental Health and Turnover Following an Initial Term of Military Service

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ABSTRACT Objective: This study compared the rates of mental disorders between Marines who re-enlisted and Marines who separated after 1 term, distinguishing between Marines who were and were not recommended for re-enlistment. Methods: Participants included 28,693 male Marines enlisting for 4-year terms between 2002 and 2003, including 9,338 who re-enlisted after 1 term, 18,177 who voluntarily separated after 1 term, and 1,184 who were not recommended for re-enlistment and separated after 1 term. Results: Analysis revealed disproportionately high rates of mental disorders among Marines not recommended for re-enlistment (Odds Ratio = 8.5, 95% Confidence Interval 7.5–9.8) compared with Marines who re-enlisted. Mental disorder prevalence was also elevated among service members who voluntarily separated after 1 term (Odds Ratio = 1.2, 95% Confidence Interval 1.1–1.3). Several specific categories of disorders, including personality disorders, substance use disorders, and post-traumatic stress disorder, predicted re-enlistment status. Conclusions: These results suggest that mental disorders influence personnel retention in diverse ways, including heightened turnover, which could have a substantial impact on military manpower costs.

INTRODUCTION

Years of armed conflict in Iraq and Afghanistan have led to a substantial increase in reported rates of mental health problems among military service members.[1] For example, 2009 was the first year in which hospitalizations for mental disorders exceeded those for injuries or pregnancies during a decade of tracking by the Armed Forces Health Surveillance Center.[2] Increased rates of mental health problems have numerous implications for the Department of Defense, the most obvious of which is heightened concern about mental health care quality, cost, and utilization.[3]

However, within the military, mental disorders have ripple effects that extend far beyond the military health care system. A prime example is the impact that mental disorders have on personnel loss and ultimately on force strength. Specifically, anxiety, depression, and other manifestations of poor mental health are a major cause of early attrition among U.S. military personnel.[4–8] Hoge et al[9] found that Army personnel who were hospitalized for mental disorders were significantly more likely to be involuntarily discharged from the Army for misconduct and other legal problems. Additionally, an analysis of archival data from a large Navy cohort identified depression and anxiety as predictors of military discharge for behavioral problems and misconduct.[10] This study also found substantial overlap between mental health hospitalizations and early attrition.

In addition to early attrition, poor mental health may affect force strength via turnover following the end of obligated service (EOS). However, little information is available regarding the association between mental disorders and re-enlistment outcomes among service members who complete their initial service terms. The relationship between mental health and re-enlistment status needs clarification for several reasons. First, the military has potentially lost a considerable financial investment each time a service member fails to re-enlist. The costs associated with replacing a service member who has separated include recruitment costs, training costs, and education costs for those service members entering

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This represents report 11-639, supported by the Department of the Army Defense Medical Research and Development Program, under work unit 60209. The views expressed in this article are those of the authors and do not necessarily reflect the official policy or position of the Department of the Navy, the Department of Defense, or the U.S. Government. This research has been conducted in compliance with all applicable federal regulations governing the protection of human subjects in research (Protocol NHRC.2009.0024). Approved for public release; distribution is unlimited.

a specialized field[11–14]; thus, the overall expense is substantial. Also, military researchers have proposed a "healthy warrior effect" in which healthier service members are more likely to have extended military careers,[15,16] yet this hypothesis has not been tested in one of the most likely scenarios—the time of potential re-enlistment. A review of medical and re-enlistment records for a large cohort of separating service members could add to the research.

In the current study, we sought to determine if military personnel with diagnosed mental disorders re-enlist at different rates than service members without mental health diagnoses. We aimed to examine and compare the rates of mental disorders between Marines who re-enlist after 1 term and Marines who separate after 1 term, distinguishing between Marines who were and were not recommended for re-enlistment. We hypothesize that Marines with mental disorder diagnoses will re-enlist at disproportionately lower rates.

METHODS

Medical and personnel variables used in this study were extracted from a pre-existing database, the Career Historical Archival Medical and Personnel System (CHAMPS).[17] This database includes medical information from the TRICARE Management Activity (TMA), such as inpatient and outpatient treatment records and diagnoses. With the exception of medical encounters that take place in a combat zone, records are updated for active duty military personnel following every inpatient and outpatient medical encounter that is reimbursed through TMA. The CHAMPS database also includes personnel information, such as demographics, discharges, and re-enlistments.[17]

For the current study, medical and personnel data for all Marines enlisting for the first time during the calendar years 2002–2003 (n = 64,254; 93.1% male and 6.9% female) were obtained. Participants were followed from the start of service until documented separation or 6 months after the EOS, a date assigned at accession. To determine study eligibility and create comparison groups, all participant data were screened for several key variables: initial service term length, rank, re-enlistment, and attrition. First, participants not enlisting for approximately 4-year (48 ± 6 months) terms (n = 11,144) were removed from the study. Additionally, all Marines who were classified as officers or changed to another service (n = 435), or with desertions on record (n = 564) during the study period were excluded. The remaining personnel (n = 52,111; 93.2% male and 6.8% female) were then further screened and categorized into 3 final comparison groups based on 3 variables used to classify re-enlistment status: re-enlistment recommendation, Department of Defense discharge type, and personnel loss type.

Over 70% (n = 36,953) of the eligible personnel received a positive recommendation for re-enlistment. For these Marines, we used personnel records to identify individuals classified as an "honorable loss," with a final discharge code of "EOS completion of required service, voluntary release or transfer," and with no re-enlistments during the 6 months after first discharge. This subgroup comprised the "separation" group (n = 19,241; 94.5% male and 5.5% female). Of the remaining Marines who were recommended for re-enlistment, those whose re-enlistments could be confirmed by Defense Manpower Data Center (DMDC) records comprised the final "re-enlistment" group (n = 10,080, 92.6% male and 7.4% female). Lastly, a "not recommended" study group was formed by combining individuals whose service records indicated they were not recommended for re-enlistment during routine performance evaluations (n = 1296; 91.1% male and 8.9% female). Service members who are not recommended for re-enlistment are permitted to re-enlist only under special circumstances, and in our sample, less than 5% were approved to do so. These 5% were excluded from further analyses. Not included in this study are individuals who are ineligible to re-enlist because of other service-related regulations or failure to meet medical or physical standards. Following the inclusion process, the study sample totaled 30,617 Marines, comprised of 28,693 males and 1,924 females.

Health care data for all participants were examined to identify psychiatric diagnoses. Participants were classified as having a history of psychiatric disorder diagnoses if their medical records included an International Classification of Diseases, Ninth Revision, Clinical Modification diagnostic code between 290 and 316 (excluding 305.10 tobacco disorder, 307.81 tension headache, and 310.20 postconcussive disorder).[18] Diagnoses were subsequently categorized by type of medical visit: inpatient or outpatient. In order to capture the most severe occurrence of each disorder, outpatient visits in addition to an inpatient visit for the same diagnosis were not counted as separate incidents. After stratifying records based on visit type, psychiatric disorders were classified into the following major diagnostic categories: substance abuse disorders (excluding tobacco), mood disorders, adjustment disorders, personality disorders, sleep disorders, anxiety disorders (including posttraumatic stress disorder [PTSD]), and other mental disorders (including, but not limited to, eating and psychotic disorders). Participants were categorized such that they could fall into more than 1 mental disorder category. To identify participants suffering from comorbid disorders, a sum total of the major diagnostic categories recorded was computed. For example, participants with 1 diagnosis each from the adjustment, mood, and personality disorder categories were coded as having 3 types of disorders, whereas a participant with 2 different anxiety disorders was coded as having 1 type of disorder.

DMDC records were also examined for combat deployment histories among all study participants. Deployments to Iraq or Kuwait (i.e., Operation Iraqi Freedom), or Afghanistan (i.e., Operation Enduring Freedom) were classified as combat deployments. Combat deployments between the date of accession and the end of initial service term were summed and categorized into 3 groups: no combat deployments, 1 combat deployment, and 2 or more combat deployments.

Analysis

Descriptive statistics, including means and percentages, were calculated for each study group for all demographic, deployment, and mental health variables. Pearson χ^2 tests for proportions were used to compare demographic variables between study groups and sexes. Univariate and multivariate logistic regression analyses were then performed to assess the associations between major categories of mental health disorders and re-enlistment status. Odds ratios (ORs) and 95% confidence intervals (CIs) for each variable of interest were calculated. All variables statistically significant at the univariate level were included, along with significant demographic and career variables (i.e., race, age, and number of combat deployments) in a series of multivariate models. Statistical significance was set at $p < 0.05$ (2-tailed) for all analyses. Statistical analyses were performed using SPSS software (SPSS 17.0 for Windows, SPSS, Chicago, Illinois).

RESULTS

Analyses of female Marines (n = 1,924) yielded insufficient statistical power for definitive interpretation; therefore, only general findings are presented (data not shown). Among the female personnel, a majority of the sample were White non-Hispanic (47.0% re-enlistment, 57.5% separation, and 69.6% not recommended) and younger than 21 years of age (87.5% re-enlistment, 85.7% separation, and 80.9% not recommended) (data not shown). The majority of females had never been combat deployed (52.3% re-enlistment, 52.7% separation, and 96.5% not recommended). Approximately one-third of both the re-enlistment (34.4%) and separation (34.8%) groups had at least one outpatient mental health diagnoses compared to over 40% in the not recommended group (41.7%). Comparison analysis showed significantly more females than males received outpatient and inpatient mental health diagnoses, respectively.

After excluding females from further analysis, subsequent results are based on 28,693 male Marines. Table I shows the frequency distribution and univariate comparisons for demographic, career, and psychiatric diagnoses for each male study group. A majority of the sample were White non-Hispanic (62.1% re-enlistment, 73.0% separation, and 61.3% not recommended) and younger than 21 years of age (84.2% re-enlistment, 85.2% separation, and 88.7% not recommended). The most common number of combat deployments was 1, with over one-third of participants in each study group in this category (38.9% re-enlistment, 40.6% separation, and 41.3% not recommended).

Approximately 1 of every 2 Marines in the not recommended for re-enlistment group received a mental health diagnosis during an outpatient visit within the first term (46.5%) compared with 1 in 8 in the separation group (12.8%) and 1 in 11 in the re-enlistment group (9.1%) (Table I). The most common outpatient psychiatric diagnosis across all 3 groups was substance abuse disorders (3.7% re-enlistment, 5.6% separation, and 31.2% not recommended), followed by anxiety disorders (2.5% re-enlistment, 4.2% separation, and 11.5% not recommended).

Although inpatient mental health diagnoses were uncommon, at least 1% of each study group had 1 or more hospitalizations as a result of mental health issues during their first term (1.0% re-enlistment, 1.1% separation, and 7.5% not recommended) (Table I). Substance abuse disorders were the most common cause of inpatient psychiatric visits among all groups (0.4% re-enlistment, 0.6% separation, and 4.1% not recommended), followed by mood disorders (0.3%, 0.3%, and 3.0%, respectively).

Univariate Regression Results

Not Recommended for Re-Enlistment Group Versus Re-Enlistment Group

Univariate logistic regression analyses comparing the mental health diagnoses of the not recommended for re-enlistment group and the re-enlistment group revealed statistical significance in nearly every category (Table I). Participants who received a mental health diagnosis either during an inpatient or outpatient medical encounter during their first term were over 8 times more likely to not be recommended for re-enlistment when compared with participants who received no inpatient diagnoses (OR = 8.4, $p < 0.001$; OR:8.7, $p < 0.001$, respectively). Additionally, participants with comorbid inpatient diagnoses were 11 times more likely not to be recommended for re-enlistment than those with no inpatient diagnoses (OR = 11.0, $p < 0.001$). Though nearly all types of mental health disorders were significantly associated with re-enlistment status, the strongest predictors of not being recommended for re-enlistment were inpatient personality disorders (OR = 15.4, $p < 0.001$), outpatient substance abuse disorders (OR = 11.7, $p < .001$), and outpatient personality disorders (OR = 11.4, $p < 0.001$).

Separation Group and Re-Enlistment Group

Univariate comparisons were also performed between the separation and re-enlistment groups, and a number of significant associations emerged (Table I). Marines who received any type of mental health diagnosis during a first-term outpatient encounter were over 50% more likely to separate than those with no outpatient diagnoses (OR = 1.5, $p < 0.001$). Marines with comorbid outpatient diagnoses were also significantly more likely to separate than those with no diagnoses (OR = 1.6, $p < 0.001$). The diagnoses with the strongest associations with re-enlistment status were outpatient personality disorders (OR = 1.8, $p < 0.001$), outpatient anxiety disorders, including PTSD (OR = 1.7, $p < 0.001$), and outpatient PTSD (OR = 2.0, $p < 0.001$). Largely because of the limited number of total inpatient diagnoses, only inpatient substance abuse disorders predicted re-enlistment status, with the separation group nearly twice as likely as the re-enlistment group to receive a diagnosis (OR = 1.6, $p < 0.05$).

TABLE I. Frequency Distribution and Univariate Comparisons of Demographic, Deployment, and Mental Health Characteristics With Career Outcomes Among First-Term Male Marines

	Re-Enlist, N = 9,338 (32.50)	Separate, N = 18,174 (63.30)	Not Recommended, N = 1,181 (4.10%)	Separate[a]	Not Recommended[b]
		N (%)		Univariate Regression, OR (95% CI)	
Age at Accession (Years)					
<21 (Ref)	7,866 (84.2)	15,478 (85.2)	1,048 (88.7)	1	1
≥21	1,472 (15.8)	2,699 (14.8)	133 (11.3)	0.9 (0.9–1.0)*	0.7 (0.6–0.8)***
Race					
White (Ref)	5,719 (62.1)	13,035 (73.0)	724 (61.3)	1	1
Hispanic	1,745 (18.9)	2,866 (16.0)	192 (16.3)	0.7 (0.7–0.8)***	0.9 (0.7–1.0)
Black	1,245 (13.5)	1,035 (5.8)	190 (16.1)	0.4 (0.3–0.4)***	1.2 (1.0–1.4)*
Other	506 (5.5)	927 (5.7)	48 (4.1)	0.8 (0.7–0.9)***	0.7 (0.6–1.0)
Combat Deployments					
0	2,241 (24.0)	3,781 (20.8)	435 (36.8)	1	1
1	3,638 (38.9)	7,387 (40.6)	488 (41.3)	1.2 (1.1–1.3)***	0.7 (0.6–0.8)***
2+	3,460 (37.1)	7,009 (38.6)	258 (21.8)	1.2 (1.1–1.3)***	0.4 (0.3–0.5)***
Any Diagnosis					
Inpatient	89 (1.0)	209 (1.1)	88 (7.5)	1.2 (0.9–1.6)	8.4 (6.2–11.3)***
Outpatient	851 (9.1)	2,334 (12.8)	549 (46.5)	1.5 (1.4–1.6)***	8.7 (7.6–9.9)***
Inpatient Diagnoses					
0	9,249 (99.0)	17,968 (98.9)	1,094 (92.6)	1	1
1	53 (0.6)	127 (0.7)	40 (3.4)	1.2 (0.9–1.7)	6.4 (4.2–9.7)***
2+	36 (0.4)	82 (0.5)	47 (4.0)	1.2 (0.8–1.7)	11.0 (7.1–17.1)***
Outpatient Diagnoses[c,d]					
0	8,491 (90.9)	15,859 (87.2)	638 (54.0)	1	1
1	607 (6.5)	1,592 (8.8)	325 (27.5)	1.4 (1.3–1.5)***	7.1 (6.1–8.3)***
2+	240 (2.6)	726 (4.0)	218 (18.5)	1.6 (1.4–1.9)***	12.1 (9.9–14.8)***
Substance Abuse Disorders					
Inpatient	36 (0.4)	114 (0.6)	49 (4.1)	1.6 (1.1–2.4)*	11.2 (7.2–17.3)***
Outpatient	348 (3.7)	1,016 (5.6)	369 (31.2)	1.5 (1.4–1.7)***	11.7 (10.0–13.8)***
Anxiety Disorders[e]					
Inpatient	21 (0.2)	41 (0.2)	20 (1.7)	1.0 (0.6–1.7)	7.5 (3.8–14.8)***
Outpatient	229 (2.5)	762 (4.2)	136 (11.5)	1.7 (1.5–2.0)***	5.2 (4.1–6.5)***
PTSD					
Inpatient	13 (0.1)	30 (0.2)	14 (1.2)	1.2 (0.6–2.3)	8.6 (4.0–18.4)***
Outpatient	121 (1.3)	457 (2.5)	87 (7.4)	2.0 (1.6–2.4)***	6.1 (4.6–8.0)***
Adjustment Disorders					
Inpatient	25 (0.3)	59 (0.3)	25 (2.1)	1.2 (0.8–1.9)	8.1 (4.6–14.1)***
Outpatient	174 (1.9)	460 (2.5)	107 (9.1)	1.4 (1.1–1.6)***	5.2 (4.1–6.7)***
Mood Disorders					
Inpatient	30 (0.3)	55 (0.3)	36 (3.0)	0.9 (0.6–1.5)	9.8 (6.0–15.9)***
Outpatient	162 (1.7)	514 (2.8)	123 (10.4)	1.7 (1.4–2.0)***	6.6 (5.2–8.4)***
Personality Disorders					
Inpatient	11 (0.1)	27 (0.1)	21 (1.8)	1.3 (0.6–2.5)	15.4 (7.4–31.9)***
Outpatient	37 (0.4)	131 (0.7)	51 (4.3)	1.8 (1.3–2.6)***	11.3 (7.4–17.4)***
Sleep Disorders					
Inpatient	0 (0.0)	1 (0.0)	0 (0.0)		
Outpatient	49 (0.5)	95 (0.5)	14 (1.2)	1.0 (0.7–1.4)	2.2 (1.3–4.1)**
Other Mental Disorders					
Inpatient	13 (0.1)	28 (0.2)	10 (0.8)	1.0 (0.6–1.9)	5.3 (2.4–11.8)***
Outpatient	186 (2.0)	374 (2.1)	90 (7.6)	1.0 (0.9–1.2)	4.1 (3.1–5.3)***

ASD, acute stress disorder. [a]Significance tests reflect comparisons of the separation category with re-enlist category. [b]Significance tests reflect comparisons of the not recommended for re-enlistment category with re-enlist category. [c]Sum of major mental health diagnostic categories. [d]Adjusted for inpatient diagnoses. [e]Including PTSD and ASD. *p = 0.05;**p = 0.01;***p = 0.001.

Multivariate Regression Results

All mental health categories significant at the univariate level, along with significant demographic and deployment variables (i.e., race, age, and number of combat deployments), were included in a series of multivariate logistic regression models to further examine the relationship between mental health and re-enlistment status (Table II). More specifically, individual multivariate regression models were run, including each mental health variable separately. Each row in the table is independent of all other rows,

TABLE II. Frequency Distribution and Multivariate Comparisons of Demographic, Deployment, and Mental Health Characteristics With Career Outcomes Among First-Term Male Marines

	Re-Enlist, N = 9,338 (32.50%)	Separate, N = 18,174 (63.30%)	Not Recommended, N = 1,181 (4.10%)	Separate[a]	Not Recommended[b]
	N (%)			Multivariate Regression, OR (95% CI)	
Any Diagnosis					
Inpatient	89 (1.0)	209 (1.1)	88 (7.5)		8.0 (5.9–10.9)***
Outpatient	851 (9.1)	2,334 (12.8)	549 (46.5)	1.2 (1.1–1.3)***	8.5 (7.5–9.8)
Inpatient Diagnoses					
0	9,249 (99.0)	17,968 (98.9)	1,094 (92.6)		1
1	53 (0.6)	127 (0.7)	40 (3.4)		6.0 (3.9–9.2)***
2+	36 (0.4)	82 (0.5)	47 (4.0)		10.7 (6.9–16.8)***
Outpatient Diagnoses[c,d]					
0	8,491 (90.9)	15,859 (87.2)	638 (54.0)	1	1
1	607 (6.5)	1,592 (8.8)	325 (27.5)	1.4 (1.2–1.5)***	7.1 (6.0–8.3)***
2+	240 (2.6)	726 (4.0)	218 (18.5)	1.6 (1.4–1.8)***	11.9 (9.7–14.6)***
Substance Abuse Disorders					
Inpatient	36 (0.4)	114 (0.6)	49 (4.1)	1.6 (1.1–2.3)*	11.1 (7.1–17.3)***
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Inpatient	13 (0.1)	30 (0.2)	14 (1.2)		10.2 (4.7–22.1)***
Outpatient	121 (1.3)	457 (2.5)	87 (7.4)	1.9 (1.5–2.3)***	7.1 (5.3–9.6)***
Adjustment Disorders					
Inpatient	25 (0.3)	59 (0.3)	25 (2.1)		7.1 (4.0–12.4)***
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Mood Disorders					
Inpatient	30 (0.3)	55 (0.3)	36 (3.0)		9.3 (5.7–15.3)***
Outpatient	162 (1.7)	514 (2.8)	123 (10.4)	1.2 (1.1–1.2)***	6.1 (4.7–7.9)***
Personality Disorders					
Inpatient	11 (0.1)	27 (0.1)	21 (1.8)		15.2 (7.2–32.2)***
Outpatient	37 (0.4)	131 (0.7)	51 (4.3)	1.8 (1.2–2.6)**	10.2 (6.6–15.8)***
Other Mental Disorders					
Inpatient	13 (0.1)	28 (0.2)	10 (0.8)		5.2 (2.7–11.8)***
Outpatient	186 (2.0)	374 (2.1)	90 (7.6)		4.1 (3.1–5.3)***

ASD, acute stress disorder. [a]Significance tests reflect comparisons of the separation category with re-enlist category. [b]Significance tests reflect comparisons of the not recommended for re-enlistment category with re-enlist category. [c]Sum of major mental health diagnostic categories. [d]Adjusted for inpatient diagnoses. [e]Including PTSD and ASD. *p = 0.05; **p = 0.01; ***p = 0.001.

because each row represents results for the specific row variable, following adjustments for demographics and deployment histories. As with the univariate analyses, 2 outcome comparisons were made at the multivariate level; the not recommended versus the re-enlistment group and the separation versus the re-enlistment group.

Not Recommended for Re-Enlistment Group and Re-Enlistment Group

After adjusting for demographics and deployment history, all mental health variables remained significant predictors of re-enlistment status in the multivariate comparison of the not recommended for re-enlistment and re-enlistment groups, with the exception of sleep disorders. Participants who received any inpatient diagnoses (OR = 8.0, $p < 0.001$), any outpatient diagnoses (OR = 8.5, $p < 0.001$), comorbid outpatient diagnoses (OR = 11.9, $p < 0.001$), and comorbid inpatient diagnoses (OR = 10.7, $p < 0.001$) were more likely to be in the not recommended for re-enlistment group when compared with participants with no diagnoses. Although nearly all categories of mental health disorders were predictive of being categorized as not recommended for re-enlistment, the strongest predictors were inpatient personality disorder diagnoses (OR = 15.2, $p < 0.001$), outpatient substance abuse disorder diagnoses (OR = 12.1, $p < 0.001$), and outpatient personality disorder diagnoses (OR = 10.2, $p < 0.001$).

Separation Group and Re-Enlistment Group

In the multivariate analyses comparing the separation and re-enlistment groups, participants who received any outpatient diagnosis, as well as participants with comorbid outpatient diagnoses, were approximately 50% more likely to separate (OR = 1.4, $p < 0.001$; OR = 1.6, $p < 0.001$, respectively). The strongest predictors of voluntary separation versus re-enlisting

were outpatient PTSD (OR = 1.9, $p < 0.001$), outpatient anxiety including PTSD (OR = 1.8, $p < 0.001$), and outpatient mood disorders (OR = 1.7, $p < 0.001$).

DISCUSSION

Retention of eligible service members remains a priority of the U.S. military, particularly during times of conflict. Unplanned, early separation because of mental health problems has become an issue of increasing concern, particularly with regard to the substantial financial costs of turnover.[9–14] However, little research has been done to clarify the effects of mental health concerns on the decision to re-enlist among service members who have fulfilled their contracts and are eligible for re-enlistment, or among service members who are not recommended for re-enlistment and cease their service after 1 term. This study sought to clarify the relationship between mental health and re-enlistment status among enlisted Marine Corps personnel, and to identify the rates of specific categories of mental health disorders within re-enlistment subgroups. The results indicate that after adjusting for demographics and combat deployments, eligible service members who do not re-enlist after completing their first term and service members who are not recommended for re-enlistment suffer from disproportionately higher rates of mental disorders compared with service members who re-enlist.

In the current study, Marines who were eligible for re-enlistment and received at least 1 mental health diagnosis during an outpatient encounter were significantly less likely to re-enlist after completing their first term of service. Also, numerous specific categories of mental disorders, such as PTSD, substance abuse disorder, and personality disorders were associated with decreased likelihood of re-enlistment among those eligible. These results support the hypothesis that Marines who voluntarily separate after 1 term have higher rates of diagnosed mental disorders than Marines who re-enlist. The trends reported here may also have had a significant economic impact because during the time frame for this study, the shortfall in re-enlistments reached such levels that the Marine Corps was forced to significantly increase its selective re-enlistment bonuses.[19]

These findings indicate a need for further research regarding the re-enlistment decisions of Marines eligible to extend their service. Future studies, particularly those applying qualitative methodology, should explore in greater depth the processes through which mental health diagnoses influence service members' decisions to re-enlist. This information could be used to improve military retention efforts and could inform clinical practice if type or availability of mental health treatment partly determines career outcomes. Future work should also attempt to differentiate between the effects of premilitary mental health concerns versus those conditions that stem from experiences during military service. In addition, the results of this study could be used to inform the development and implementation of more intensive mental health-related curriculum in Transition Assistance Program workshops for separating service members.

The results of this study also revealed substantial differences in the mental health of re-enlisting Marines compared with Marines who were not recommended for re-enlistment and ended their service after 1 term. Service members who were hospitalized for a mental disorder were 8 times more likely not to be recommended for re-enlistment than those who were never hospitalized for a mental disorder, a finding that is consistent with past research.[20] Also, service members with an outpatient diagnosis were nearly 9 times more likely to be classified as not recommended for re-enlistment compared with those who re-enlisted. Furthermore, nearly every type of major mental health diagnosis significantly predicted re-enlistment recommendation status, particularly personality and substance abuse disorders, which previously have been associated with separation from service.[9,21] This finding is of great importance given that over 4% (n = 1,181) of the Marines included in this study were not recommended for re-enlistment and subsequently separated. These results emphasize the need to further study the factors associated with the "not recommended for re-enlistment" designation.

This study had several limitations. First, we used TMA medical records, which only capture medical encounters that are reimbursed through the military health care network. Diagnoses or assistance received from outside providers or nontraditional support services such as religious counselors are not included in our data. Also, many symptomatic individuals may have avoided treatment altogether for various reasons, including fear of stigmatization. This would cause our estimates of mental health diagnosis rates to be underestimated. Another limitation of the study is that our databases did not provide information regarding Marines' specific motives for separating or reasons for not receiving positive re-enlistment recommendations. Further research needs to be done to examine the reasons for separation and determine whether Marines with mental disorders are separating because the job stress intensifies symptoms, or if they are exhibiting behavior that is inappropriate in a military setting.

In conclusion, this study demonstrates that poor mental health affects retention in more ways than just through unplanned loss via early discharge. After adjusting for demographic and combat history variables, the results indicate that in the current sample, Marines with mental health diagnoses are significantly more likely both to separate voluntarily and to receive a negative recommendation for re-enlistment. Future studies should attempt to disentangle "existed before service" conditions from new-onset conditions during military service, so that implications for applicant screening and primary prevention, respectively, can be better understood. Moreover, qualitative information on factors affecting re-enlistment decisions could substantially augment the quantitative findings presented herein.

ACKNOWLEDGMENT

The authors acknowledge the contributions of Thierry Nedellec in the collection and analysis of study data

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REPORT DOCUMENTATION PAGE

1. REPORT DATE (DD MM YY)
08 11

2. REPORT TYPE
Journal Article

3. DATES COVERED (from – to)
2002-2003

4. TITLE
Mental Health and Turnover Following an Initial Term of Military Service

5a. Contract Number:
5b. Grant Number:
5c. Program Element Number:
5d. Project Number:
5e. Task Number:
5f. Work Unit Number: 60209
6g. IRB NHRC.2009.0024

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8. PERFORMING ORGANIZATION REPORT NUMBER
11-41

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10. SPONSOR/MONITOR'S ACRONYM(S)
NMRC/NMSC

11. SPONSOR/MONITOR'S REPORT NUMBER(s)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution is unlimited.

13. SUPPLEMENTARY NOTES
Military Medicine, (2012), 177(7), 766-772

14. ABSTRACT
Objective: This study compared the rates of mental disorders between Marines who re-enlisted and Marines who separated after 1 term, distinguishing between Marines who were and were not recommended for re-enlistment.
Methods: Participants included 28,693 male Marines enlisting for 4-year terms between 2002 and 2003, including 9,338 who re-enlisted after 1 term, 18,177 who voluntarily separated after 1 term, and 1,184 who were not recommended for re-enlistment and separated after 1 term.
Results: Analysis revealed disproportionately high rates of mental disorders among Marines not recommended for re-enlistment (Odds Ratio = 8.5,95% Confidence Interval 7.5-9.8) compared with Marines who re-enlisted. Mental disorder prevalence was also elevated among service members who voluntarily separated after 1 term (Odds Ratio = 1.2, 95% Confidence Interval 1.1-1.3). Several specific categories of disorders, including personality disorders, substance' use disorders, and post-traumatic stress disorder, predicted re-enlistment status.
Conclusions: These results suggest that mental disorders influence personnel retention in diverse ways, including heightened turnover, which could have a substantial impact on military manpower costs.

15. SUBJECT TERMS
military, mental health, comorbidity

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	18a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			Commanding Officer
UNCL	UNCL	UNCL	UNCL	8	18b. TELEPHONE NUMBER (INCLUDING AREA CODE) COMM/DSN: (619) 553-8429